

STATE ROUTE 164 CORRIDOR STUDY

EVALUATION CRITERIA TECHNICAL MEMORANDUM

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Prepared for:

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Introduction

This technical memorandum discusses the evaluation criteria and metrics that will be used to determine and compare the feasibility of the short- and long-term improvement projects proposed for the State Route 164 (SR 164) Route Development Plan (RDP). The evaluation criteria and metrics developed for this analysis are based on SR 164 *Goals and Objectives* identified by the Corridor Working Group (CWG) partners, stakeholders and the WSDOT team. The metrics will be used as a tool to compare the identified short-term and long-term physical or operational improvements along the corridor.

There will be two levels of project screening: initial screening and detailed screening. The initial screening will be a “fatal flaw” analysis to eliminate projects that fail to address the key problems along the corridor and/or present significant cost, feasibility or environmental issues. Some of the evaluation criteria in this list will be used for this initial screening process. Those are marked with (*). A more in-depth metric may be used in the detailed screening process.

Following the initial screening process projects will be compiled to form a spectrum of alternatives for each roadway segment. These alternatives will be refined and a detailed screening of these alternatives will occur using all the evaluation criteria. This second screening will be conducted to select a Preferred Build Alternative(s) that will be carried forward as a whole or incrementally into subsequent project-level environmental review process(es).

For each screening process, the study team will use the best information and analysis available. See Appendix A for a flow diagram that describes the evaluation process steps and key terms.

Evaluation Criteria and Metrics

Safety

The safety criteria will be used to address the estimated reduction in accident frequencies and accident severities compared to baseline Years 2001-2003 conditions. Each project will be evaluated and compared to assess the safety enhancements provided by the proposed projects along the corridor. An overall Safety evaluation or score will be determined from the following elements:

- Design Standards: There are likely to be segments of the corridor that do not meet current WSDOT design standards. The corridor will be evaluated using current standards to determine where deficiencies exist. This measure will evaluate whether the proposed improvements (projects or alternatives) mitigate the design deficiency.

Metrics:

- Does the improvement meet fully (+), meet generally (0), or significantly depart from (-) WSDOT's design standards?

- Does the improvement improve (+), have no effect on (0), or worsen (-) existing design deficiencies?
- Vehicle Accidents: This measure considers accidents that may be avoided by physical enhancements such as street illumination or the addition of a left turn signal. This measure will compare proposed accident prevention improvements using HAC/HAL data prepared by WSDOT.

Metrics:

- Does the improvement improve (+), have no effect on (0), or worsen (-) the likelihood of accidents in a particular location or segment of the corridor?
- Pedestrian Safety: There are a variety of pedestrian safety issues along the corridor. This metric considers pedestrian accident locations to compare how each improvement addresses pedestrian safety along the corridor.

Metrics:

- Does the improvement improve (+), have no effect on (0), or worsen (-) pedestrian safety at a particular location or segment along the corridor?
- School Buses and Crossings for Schoolchildren: There are several schools located in the vicinity of SR 164. Safe pedestrian crossings and walk routes are required at school bus stops to ensure that school children can walk next to or across the corridor safely. This measure will compare how each improvement addresses school crossing along the corridor.

Metrics:

- Does the improvement increase (+), have no effect on (0), or decrease (-) the number of safe pedestrian crossings for schoolchildren?
- Transit Buses and Crossings: King County Metro has several bus stops located on the SR 164 corridor. Safe pedestrian crossings and walk routes are needed near these stops to ensure that transit riders can walk next to or across the corridor safely. This measure will compare how each improvement addresses transit crossings along the corridor.

Metrics:

- Does the improvement increase (+), have no effect on (0), or decrease (-) the number of safe pedestrian crossings for transit riders?

Mobility

The mobility criteria will be used to compare the changes in the efficiency and reliability of vehicular and emergency response along the corridor with each of the proposed improvements.

- Access to Plateau: SR 164 is a primary route for trips onto and off of the Enumclaw Plateau. Various improvements may provide alternative route(s)

between the plateau and Auburn, State Route 18, and State Route 167 and would therefore reduce local vehicular demand on the SR 164 corridor. This measure would qualitatively compare the improvements with regard to improving access choices for plateau residents.

Metrics:

- Does the proposed improvement provide alternative access choices for Enumclaw plateau residents (yes or no)?
- Access Management: Managing access along SR 164 would reduce or consolidate the number of access points where vehicles enter and exit the corridor. Access management would reduce stop-and-go traffic and improve the safety of the corridor. This measure will qualitatively compare how access management improvements would affect mobility along the corridor.

Metrics:

- Does the project decrease (+), have no change (0), or increase (-) the number of access points (e.g. driveways and awkward angled intersections) along the corridor and the number of driveways within a jurisdiction's access control authority?
- Emergency Access: SR 164 is a primary emergency route used by Auburn, Enumclaw, the Muckleshoot Indian Tribe, and portions of unincorporated King County. Improving the mobility or providing alternative emergency routes could improve the response time and reliability for emergency vehicles. This measure would qualitatively compare the effect of the proposed improvements on emergency response travel time and reliability, especially in congested portions of corridor during peak periods.

Metrics:

- Does the proposed improvement provide improved emergency access in congested areas of the corridor during peak periods (yes or no)?
- Freight: SR 164 is classified as a T2 freight route (between 4 and 10 million tons of freight use the corridor annually). Freight enhancements such as freight-only lanes, bypass routes, large sized intersections for turning movements, or encouraging freight travel during off peak periods to lessen conflicts along the corridor during peak periods. This measure will compare the changes each improvement will have to freight mobility along the corridor.

Metrics:

- Does the proposed project decrease (+), have no effect on (0), or increase (-) freight travel times along the corridor?
- Specific Event Transit Measure: The corridor supports a number of large events (e.g. White River Amphitheater concerts, King County Fair) causing traffic conditions to worsen along the corridor. This measure will compare how the proposed transit improvements (transit service at external locations and transit amenities along the corridor) allow for expeditious and convenient movement of

patrons to these venues (e.g. bus pullouts, HOV lanes and ancillary parking away from the event).

Metrics:

- Does the proposed event specific transit improvement enhance (+), have no effect (0), or worsen (-) traffic conditions along the corridor?
- Travel Delay: WSDOT has adopted quantitative traffic operation measures, including intersection level-of-service, total vehicle hours of delay, person hours of delay, and volume to capacity. These measures will be used to compare each of the proposed improvements.

Metrics:

- Does the proposed project improve (+), have no effect on (0), or worsen (-) intersection and segment level of service?
- Does the proposed project decrease (+), have no effect on (0), or increase (+) total intersection and person delay?
- Does the proposed project decrease (+), have no effect on (0), or increase (-) the volume to capacity ratio?
- Does the proposed project decrease (+), have no effect on (0), or increase (-) the travel time along the corridor?

Transit/HOV Use and Functionality

These criteria will be used to evaluate the existing and future performance of bus transit and high occupant vehicle (HOV) use and functionality along SR 164. The following is a list of potential performance measures to assess the effect of each of the proposed improvements on transit and high occupant vehicle (HOV) use and functionality.

- HOV Volumes: This measure will compare how each improvement influences HOV performance along the corridor.

Metrics:

- Does the proposed improvement increase (+), have no effect on (0), or reduce HOV person throughput along the corridor?
- Transit Mode Split: This measure will compare the mode split of each improvement to determine which ones would increase transit usage along the corridor.

Metrics:

- Does the improvement increase (+), have no effect on (0), or reduce (-) the percent transit usage into, away from, and within the study area?
- Transit Service: This measure will compare the difference in the transit and auto travel times for a set of origin-destination pairs to determine the transit benefits achieved with each of the improvements.

Metrics:

- Does the improvement reduce (+), have no effect on (0), or increase (-) transit travel times between selected locations along the corridor?

Pedestrian, Bicycle and Horse Riders Access

This criterion evaluates pedestrian, bicycle, and horse rider access across and parallel to the corridor. The following is a list of the criteria that will be used to measure the pedestrian, bicycle, and horse rider access benefits achieved by each of the proposed improvements.

- Pedestrian, Bicycle and Horse Trail Design Standards: This measure will use the American Association of State Highway and Transportation Officials (AASHTO) guidelines to identify where pedestrian, bicycle, and horse rider crossing points are required and to provide acceptable design standards to promote pedestrian, bicycle, and horse rider mobility.

Metrics:

- Does the improvement increase (+), have no effect on (0), or worsen (-) the number of pedestrian crossings along the corridor.
- Does the improvement increase (+), have no effect on (0), or worsen (-) the number of bicycle routes on the corridor.
- Does the improvement increase (+), have no effect on (0), or worsen (-) the number of horse rider trails near the corridor.

Environmental Effects

Environmental criteria will measure the effect each of the improvements has on the natural and built environment.

- Community and Business Disturbance: This measure will compare the potential effects on communities and businesses located near the corridor as a result of the proposed improvements.

Metrics:

- Does the proposed improvement improve (+), have no effect on (0), or worsen (-) the estimated number of community and business disturbances during construction?
 - Does the proposed improvement improve the quality of life of communities and businesses along the corridor (yes or no)?
 - Does the proposed improvement increase (+), have no effect on (0), or decrease (-) the number of available parking spaces available along the corridor?
 - Does the proposed project reduce (+), have no effect on (0), or increase (-) noise impacts on sensitive receptors?
- Development Rights, Open Space and Right-of-Way (ROW): Road widening or other projects might require the acquisition of additional ROW, and potentially result in the displacement of adjacent property or open space. This measure will

use aerial photographs to estimate the effects road widening improvements might have on existing property, and open-space.

Metrics:

- At the project level, does the proposed project require additional right of way (yes or no)?
 - At the alternative level, how much additional right of way is required (quantity)?
 - Does the proposed improvement maintain property with special status (yes or no), (i.e. Open Space designation, Farmland Preservation Program, Historical Preservation, etc)?
- Environmental Justice: This measure compares the effects each of the improvements have on affordable housing, and low-income and minority population neighborhoods along the corridor.

Metrics:

- At the project level, does the proposed project change the characteristic of low income and/or minority communities (yes or no)? At the alternative level, how much impact does the alternative have on low income and/or minority communities (quantity)?
- Does the proposed improvement decrease (+), have no change (0) or increase (-) the impacts on low income and/or minority neighborhoods?



Historical / Cultural / Architectural Resources: This measure will compare the effects each improvement may have on near by known historical, cultural, and architectural sites.

Metrics:

- Does the proposed project have any adverse effects (yes or no) on known historical, cultural, and architectural site resources along the corridor?



Natural Environmental Effects: This measure will determine the potential effects each of the proposed improvements have on the adjacent environment including wetlands, floodplains, fish and wildlife habitat, threatened or endangered species habitat, geologic hazards, and riparian areas based on field observations and existing environmental mapping of the area.

Metrics:

- Does the proposed improvement decrease (+), have no effect on (0), or increase (-) the number of salmon and fish bearing stream crossings along the corridor?
- Does the proposed improvement decrease (+), have no effect on (0), or increase (-) the displacement / disturbance of threatened, endangered species and habitat along the corridor?
- Does the proposed improvement increase (+), have no effect on (0), or decrease (-) the acreage by category of wetlands, and floodplains along the corridor?

- Does the proposed improvement decrease (+), have no effect on (0), or increase (-) the potential impacts to geologically hazardous areas along the corridor?

Land Use and Policy Consistency

The land use and policy consistency criteria will measure whether the proposed improvements comply with the jurisdictional transportation and land use policies. The following measures will be used to assess if each of the improvements is consistent with land use policies.

- Agriculture / Farmland Preservation Plan (FPP) Effects: Preserving the areas zoned agricultural and farmland is important to the residents along the corridor. Therefore, this measure will compare how much these improvements adversely affect the areas designated agricultural land.

Metrics:

- Does the proposed improvement increase (+), have no effect on (0), or decrease (-) the land located within an Agricultural Production District or land enrolled in a Farmland Preservation Program?
- Does the proposed improvement create land use conflicts (yes or no) such as traffic, noise, development pressure, etc on agricultural practices?
- Comprehensive Plans: This measure will qualitatively determine if the improvements maintain the land use and transportation policies and plans of Auburn, Enumclaw, King County, the Muckleshoot Indian Tribe, and the Puget Sound Regional Council.

Metrics:

- Does the proposed project maintain consistency (yes or no) with each jurisdiction's Comprehensive Plan land use and transportation policies?
- Support Economic Development: Mobility and safety improvements will encourage commercial and recreational trips along the corridor. This measure will determine if the improvement meets the jurisdictions' adopted visions and strategies for promoting economic development along the corridor.

Metrics:

- Does the proposed project meet each jurisdiction's adopted visions and strategies for promoting economic development (yes or no) in the region?



Project Costs and Benefits

These criteria evaluate the financial costs and benefits to construct and maintain improvements along the corridor. Specific measures have been selected for this

evaluation process based upon their appropriateness in estimating the capital cost, cost effectiveness, right-of-way and visual affects.

- Capital Costs: Capital costs will be estimated at a planning level for each of the improvements proposed. The costs will be normalized to Year 2005 dollars, and will be estimated using per-foot or per-mile averages experienced by improvements recently implemented in the area. This measure will compare the relative costs of each improvement.

Metrics:

- What is the difference in the capital Year 2005 cost to build each of the proposed alternatives (comparison of estimated dollars to implement the alternative)?
- Operation and Maintenance: This measure will compare the operation and maintenance costs anticipated for each of the improvements based on estimates established by FHWA and FTA.

Metrics:

- What is the annual operation and maintenance cost to build and maintain each of the proposed alternatives (comparison of estimated operation and maintenance costs to maintain each of the alternatives)?
- Cost Effectiveness: This measure will look at cost savings benefits each of the alternatives provides to the user. The person hours saved and safety improvements will be the primary sources to evaluate cost effectiveness.

Metrics:

- What is the difference in the person-hours to travel across the corridor (comparison of the person-hours)?
- Does the improvement decrease (+), have no effect on (0), or increase (-) the user's cost to travel on the corridor due to the potential safety improvements provided?
- Right-of-Way Effects: Layouts of each alternative's potential right-of-way limits will be created on aerial photographs to estimate the size of land that will be affected within each alternative.

Metrics:

- At the project level, does the proposed project require additional right-of-way (yes or no)?
- At the alternative level, how much additional right-of-way is required (quantity)?
- At the project level, does the proposed project require acquisition of dwelling units adjacent to the corridor (yes or no)?
- At the alternative level, how many dwelling units will be required (quantity)?

Public Support

Public input for each alternative will be gathered by active participation of stakeholder, interests group, and elected officials. Input will be summarized and analyzed, and concerns, issues and perspectives will be considered in evaluating projects. Public support will be used as a tool to establish consensus for identifying a preferred alternative(s).

- Consensus: This measure will determine if agreement is reached by citizens, stakeholders, interest groups, and State, Local and Tribal Representatives in an effort to move forward with improvement strategies.

Metrics:

- Does the proposed improvement have support (+), is of no concern (0), or have major objections (-) from citizens, stakeholders, interest groups, and State, Local and Tribal Representatives?
- Does the proposed improvement have support (+), is of no concern (0), or have major objections (-) from elected officials?